



U.S. Department of Energy
**Energy Efficiency
and Renewable Energy**

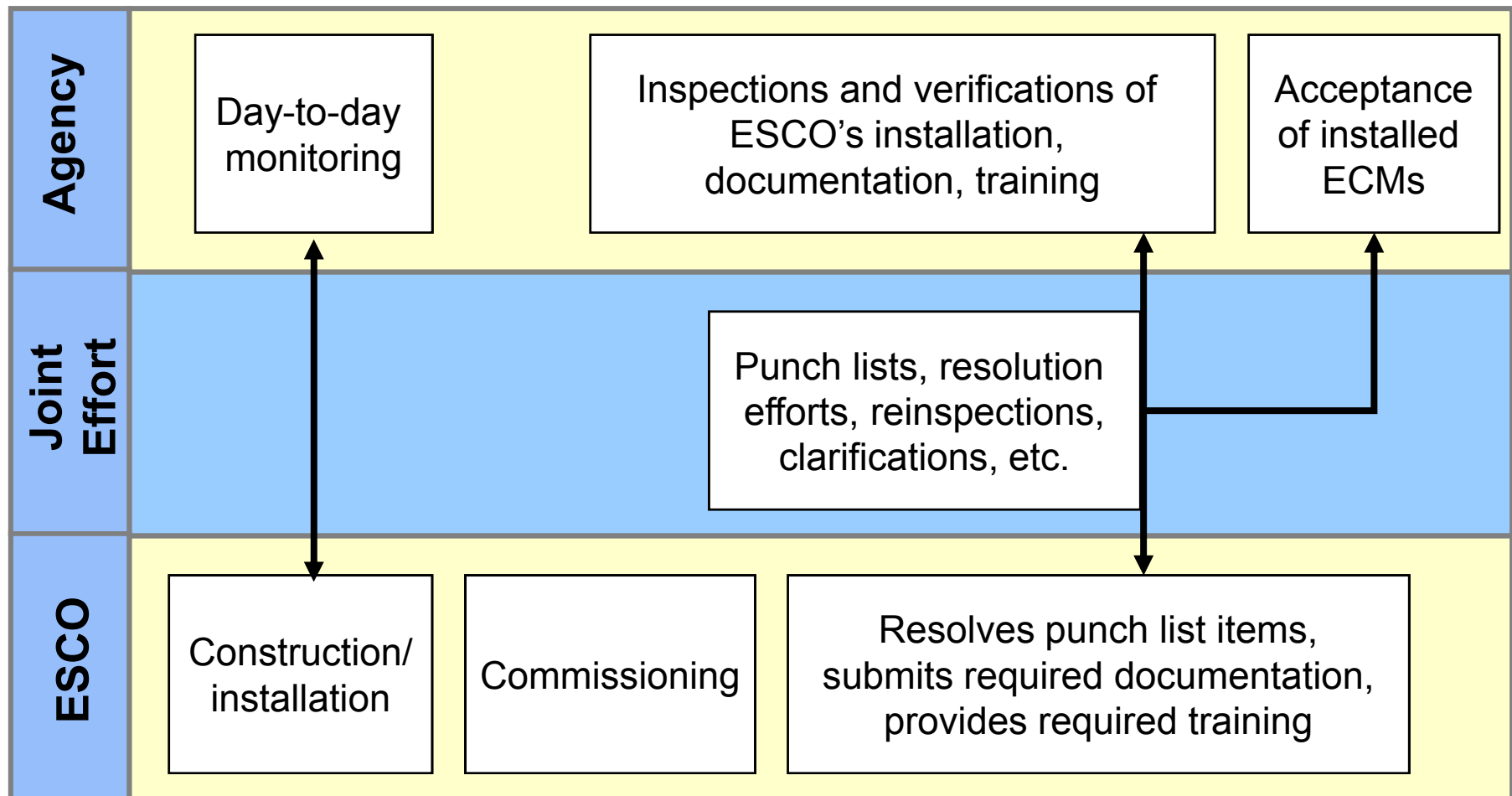
Bringing you a prosperous future where energy
is clean, abundant, reliable, and affordable

Federal Energy Management Program

Construction, Inspections, Commissioning, and Project Acceptance



ECM Installation & Acceptance





**Design & Construction
Package Review**

**Installation & Project
Acceptance**

Performance Period

ECM Installation Activities

- **ESCO prepares Quality Control Inspection Plan**
 - Stand-alone document to be approved by agency
- **Agency provides continuous monitoring of ECM installation activity**
 - Coordinate space access to prevent delays
 - Verify proper ECM installation per TO requirements and design/installation plans
 - COTR generates punch lists as applicable
- **Agency and ESCO jointly inspect ECMs**



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ECM Installation Activities (cont'd.)

- **Witness selected ECM commissioning and M&V tests to verify performance and proper operational conditions with focus on:**
 - Critical systems such EMCS set points or chiller/boiler performance tests
 - ECMs generating the most energy/cost savings
 - Sampling proper installation of ECMs such as lighting, motors, VFDs
- **FEMP ESPC Team is available for support on advanced technologies**



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Post-Installation Submittals & Review

- **Agency verifies receipt and reviews:**
 - As-built drawings in format specified in TO
 - O&M manuals & related O&M procedures
 - Spare parts lists and provided spare parts
 - Manufacturer warranties
 - ECM training materials & proposed schedule
 - Commissioning report
 - Post-installation M&V report
- **FEMP works with agency to resolve any ECM performance issues with ESCO**



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Post-Installation Activities (cont'd.)

■ **COTR**

- Verifies resolution of any ECM performance deficiencies and completion of punch list items
- Verifies that revised post-installation submittals are acceptable
- Coordinates agency staff training with ESCO
- Coordinates inspections of rebate-related ECMs with ESCO and utility



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Commissioning Report Review

- **Agency reviews and verifies:**
 - Compliance with Commissioning Plan
 - Commissioning results meet or exceed design intent and facility performance requirements
 - Any seasonal testing required at later date
 - Example: Chiller performance test if ECM installation is completed before summer peak loads
- **FEMP ESPC Team reviews advanced technologies and makes recommendations**



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Review of Post-Installation M&V Report

- **Agency reviews and verifies compliance with M&V Plan**
 - Energy/O&M baseline data is consistent with agreed-upon baseline conditions
 - Energy rates used for first year of performance period agree with rates specified in TO
 - Installed ECMs have the potential to meet or exceed the guaranteed annual cost savings
- **FEMP ESPC Team review**



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Project Acceptance Considerations

- The IDIQ (E.3.2) recommends acceptance after all post-installation submittals (e.g., commissioning, M&V reports) are accepted
- Agency project acceptance by written notification to ESCO
 - Indicates project complies with all TO requirements
 - Marks beginning of the performance period
 - ESCO may now submit monthly/yearly invoices



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Performance Period

Prepare for the Future

- Save baseline and commissioning data and O&M manuals and training materials in a binder for future reference!
 - Audits
 - Turnover



Questions?